with 6 mm or less total QRS amplitude in lead $V_1$ and at least three times greater QRS amplitude in lead $V_2$ had right atrial enlargement (predictive value 46%).

It is appropriate to realize the limited accuracy of the electrocardiogram in the diagnosis of right atrial enlargement. However, an appreciation of the varied electrocardiographic expressions of right atrial enlargement increases the predictive value of the electrocardiogram in making this diagnosis.

WILLIAM C. REEVES, MD, FACC
*Section of Cardiology*
*Department of Medicine*
*School of Medicine, East Carolina University*
*Greenville, North Carolina 27834*

### References

1. Surawicz B. Electrocardiographic diagnosis of chamber enlargement. J Am Coll Cardiol 1986;8:711–24.
2. Reeves WC, Hallahan W, Schwiter EJ, Ciotola TJ, Bunocore E, Davidson W. Two-dimensional echocardiographic assessment of electrocardiographic criteria for right atrial enlargement. Circulation 1981;64:387–91.
3. Reeves WC. Electrocardiographic detection of right atrial enlargement. Arch Intern Med 1983;143:2155–6.

### *Reply*

I regret the inexcusable omission in my review article of the study by Reeves et al. on the echocardiographic assessment of the electrocardiographic criteria for right atrial enlargement, and appreciate bringing the summary of their valuable correlations to the attention of the readers of the Journal. Of particular interest to me in their study is the echocardiographic validation of the findings of Sodi-Pallares et al. (1) that a qR pattern in lead $V_1$ indicates right atrial enlargement.

BORYS SURAWICZ, MD, FACC
*Indiana University School of Medicine*
*Indianapolis, Indiana 46223*

### Reference

1. Sodi-Pallares D, Bisteni A, Herrmann G. Some views on the significance of qR and QR type complexes in right precordial leads in the absence of myocardial infarction. Am Heart J 1962;43:716–34.

## Doppler Detection of False Pseudoaneurysm

Wang et al. (1) have nicely illustrated how Doppler echocardiography can enhance the diagnosis of left ventricular pseudoaneurysm. However, caution should be exercised before such findings can be extrapolated to routine clinical practice. We saw a patient who had a suspected postaneurysmectomy pseudoaneurysm that was detected by routine two-dimensional echocardiography during follow-up. A strong systolic and clear, albeit less impressive, diastolic Doppler signal was present in the presumed pseudoaneurysm. Additionally, the pseudoaneurysm was thin-walled and separated from the left ventricular cavity by a distinct interruption in the myocardial echoes, findings virtually identical to those in the case Wang et al. reported. The next day left ventriculography was performed in multiple views and failed to reveal any communication whatsoever between the left ventricular cavity and the suspected pseudoaneurysm. Despite the fact that this mass likely represented a pseudoaneurysm or left ventricular leak that had healed spontaneously, no further treatment was rendered and the patient continues to do well now 3 years later. Thus, Doppler echocardiographic studies may falsely suggest the existence of an active pseudoaneurysm, and left ventriculography should be performed to confirm this abnormality because the required intervention is complex and not trivial in risk. Wang et al. did in fact confirm their findings with left ventriculography, appropriately so, considering the nascent stage of noninvasive diagnosis of this problem. Their suggestion that Doppler echocardiography be used to screen for pseudoaneurysm should be endorsed but it may be premature to suggest that it permits definitive diagnosis of left ventricular pseudoaneurysms.

ANDREW J. DOOREY, MD, FACC
*Jefferson Medical College of Thomas Jefferson University*
*Philadelphia, Pennsylvania 19151*

### Reference

1. Wang R, de Santola JR, Reichek N, Edie R. An unusual case of postoperative pseudoaneurysm of the left ventricle: Doppler echocardiographic findings. J Am Coll Cardiol 1986;8:699–702.

### *Reply*

We did not advocate that Doppler echocardiography replace ventriculography in the definitive diagnosis of ventricular pseudoaneurysm because experience was limited. All workers in the field of Doppler echocardiography know the technical limitations of the test and that the accuracy of the findings is highly dependent on the skill of the echocardiographer. Doorey's findings appear to be similar to ours although we are not certain whether they are identical, especially in two respects:

1. Apart from finding a pseudoaneurysm connected to the left ventricular cavity through a distinct interruption in the myocardial echoes, our findings fulfilled the unique two-dimensional echocardiographic characteristics of this condition (1).
   a. Sharp discontinuity of the endocardial image at the site of the pseudoaneurysm communication with the left ventricular cavity.
   b. A saccular or globular contour of the false aneurysmal chamber.
   c. The presence of a relatively narrow orifice compared with the diameter of the pseudoaneurysm fundus.
2. Not only were Doppler flow signals obtained in the pseudoaneurysm but pulsed Doppler technique localized the maximal signals above the communication with the left ventricular apex.

Finally, no test is infallible and a definitive diagnosis of any condition should be based not on the findings of a single test but on the whole clinical picture.

REBECCA WANG, MD, FACC
*Cardiac Section*
*Philadelphia Veterans Administration Medical Center*
*University and Woodland Avenues*
*Philadelphia, Pennsylvania 19104*

### Reference

1. Catherwood E, Mintz GS, Kotler MN, Parry WR, Segal BL. Two dimensional echocardiographic recognition of left ventricular pseudoaneurysm. Circulation 1980;62:294–303.